

- [54] BAG STRIP FOR HANDLING SOILED
SURGICAL SPONGES
- [76] Inventor: Howard E. Dorton, 108 E. Maxwell
St., Lexington, Ky. 40508
- [22] Filed: Aug. 16, 1971
- [21] Appl. No.: 172,002

- [52] U.S. Cl. 206/57 A, 128/DIG. 5, 150/1,
206/56 AB, 206/58
- [51] Int. Cl. B65h 55/00
- [58] Field of Search 128/1 R, DIG. 5;
150/1, 52 R; 190/13 F, 41 B; 206/7 G, 7 K, 47
A, 56 A, 56 AB, 57 A, 58, 59 E, 59 F, 63.2 R,
DIG. 8, DIG. 29; 229/53, 56, 69

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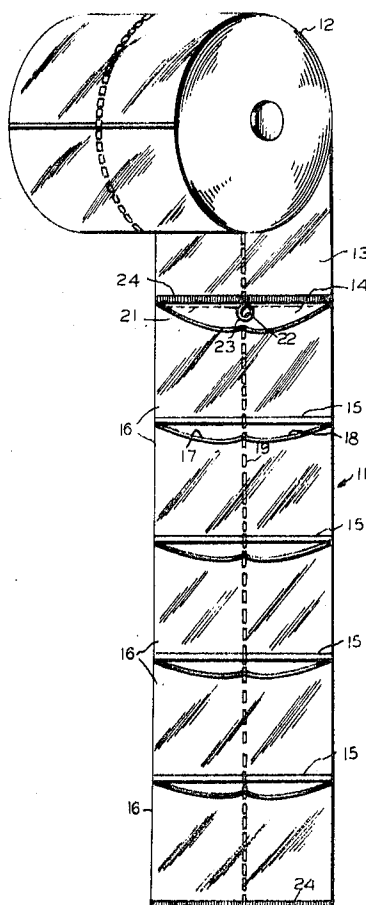
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Primary Examiner—Herbert F. Ross
Assistant Examiner—Steven E. Lipman
Attorney—Austin P. Dodge and Robert A. Ostmann

[57] ABSTRACT

The disclosure concerns an apparatus for handling soiled surgical sponges. The blood soaked sponges are deposited seriatim in transparent bags interconnected in flat vertical strips which preferably are suspended from a scale. After counting or counting and weighing of the sponges, the bag strips containing the sponges are discarded. The bags preferably are made up in a continuous length provided with uniformly spaced weakened connections, which permit separation of individual strips, and with indicia which provide a visual indication that all strips contain the prescribed number of bags. Each bag may also be divided by a rupturable internal seam into two compartments which are used individually for small sponges or joined to receive large sponges.

14 Claims, 5 Drawing Figures



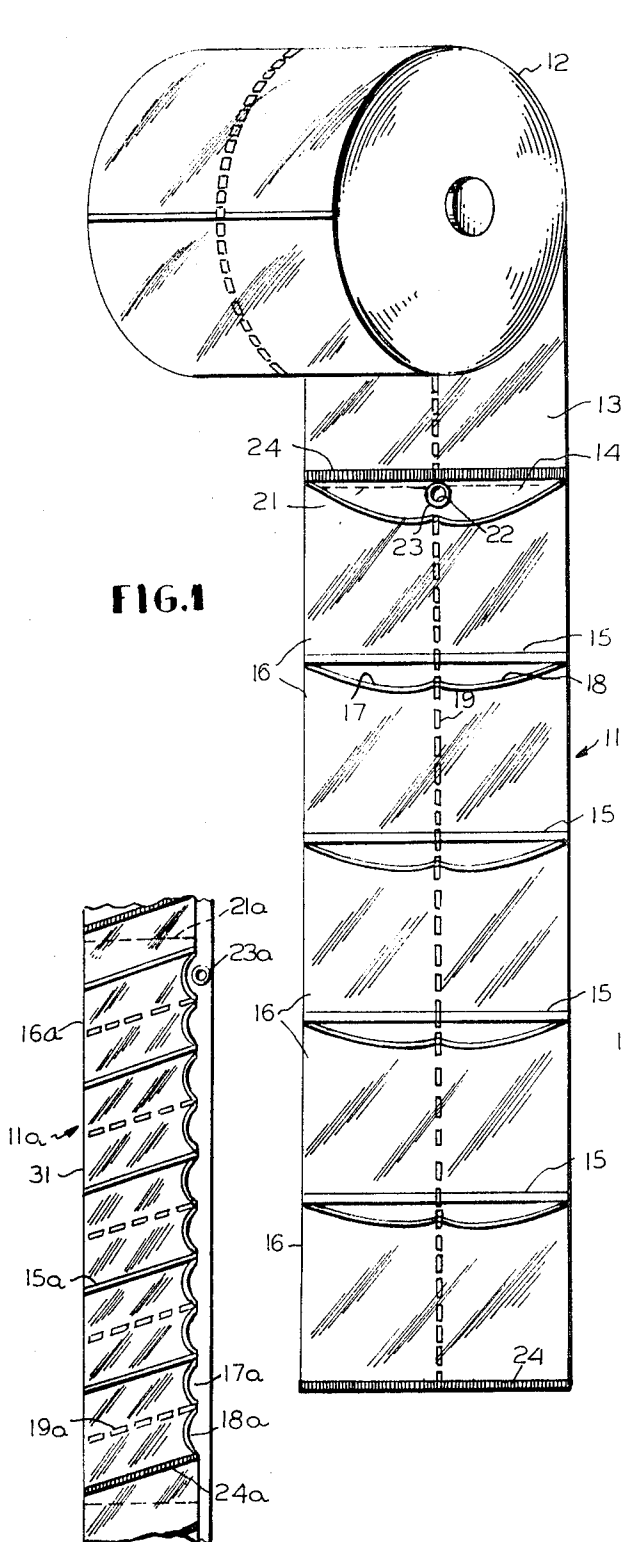


FIG. 3

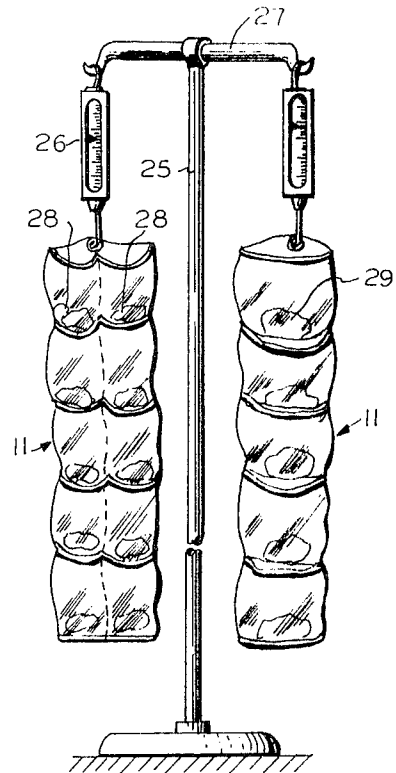


FIG.2

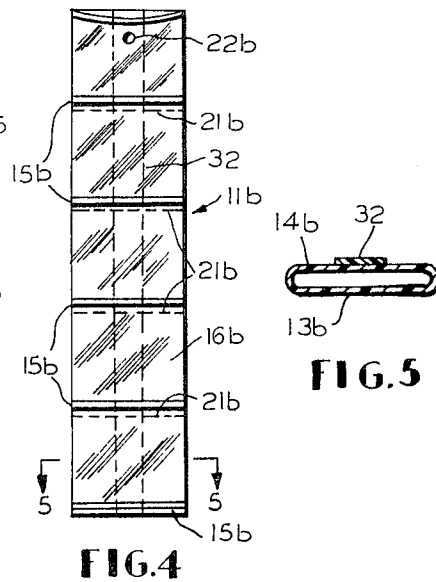


FIG. 4

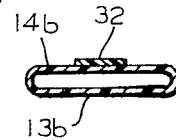


FIG. 5

INVENTOR
HOWARD E. DORTON

BY

Arthur Wolfe

ATTORNEYS

BAG STRIP FOR HANDLING SOILED SURGICAL SPONGES

BACKGROUND AND SUMMARY OF THE INVENTION

One annoying problem associated with most surgical procedures is that of minimizing the risk of leaving a sponge inside the operative wound. All solutions to this problem obviously necessitate accurate counting of the sponges used during the course of the operation, but up to the present time the methods and devices used or proposed for use in accomplishing this task are far from satisfactory. Perhaps the most popular sponge-accounting procedure consists in depositing the soiled sponges in groups of uniform number, normally ten, upon folded towels or sheets laid on a table or on the floor of the operating room. This approach not only consumes considerable space, but allows the dirty sponges to be exposed to the atmosphere of the operating room for long periods of time. This may cause bacterial contamination of the atmosphere which is highly undesirable. Moreover, unless the sponges are laid out carefully, miscounts resulting from sponge overlap are likely. Another fairly common procedure which has been used in the past consists in impaling the individual sponges on hooks arranged in rows of ten on a supporting rack. While this solution tends to minimize sponge overlap, and thereby facilitates counting, it has the same atmosphere-contaminating effect as the first approach. In addition the hooks are found to be dangerous to personnel and very difficult to keep clean. Another disadvantage of these two procedures is that they are not adapted to permit easy determination of blood loss by weighing the soiled sponges.

The prior art also discloses other proposals for handling surgical sponges, such as the compartmented dispensing and receiving block of U.S. Pat. No. 3,481,462, granted Dec. 2, 1969, and the weighing and counting machines of U.S. Pat. Nos. 3,146,944 and 3,367,431, granted Sept. 1, 1964, and Feb. 6, 1968, respectively. However, these suggestions would appear impractical for general use because the first is inconvenient to use and would present a waste disposal problem, and the other two are inherently very expensive, and difficult to keep clean.

The object of this invention is to provide an improved method and apparatus for handling soiled surgical sponges. According to the invention, the soiled sponges are deposited seriatim in a plurality of bags interconnected in a flat strip which depends from a support at one of its ends. The bag strips are made from a thin transparent, plastic material, such as polyethylene film, and each incorporates a uniform number of bags. This method and apparatus reduces contamination of the operating room atmosphere and facilitates sponge counting by encouraging segregation of the sponges and allowing the contents of each bag to be visually inspected. Moreover, since the bag strips are inexpensive enough to be considered disposable, the soiled sponges can be discarded without direct handling once they have been transferred to the bags. Finally, since the bag strips have negligible weight and can be suspended from a spring scale, the invention affords a simple, clean technique for computing blood loss from the weight of the blood soaked sponges used in the course of the operation.

It is recommended that the bag strips of the invention be interconnected in a continuous length and wound into a roll similar to the way in which the well known BAGGIES plastic bags are marketed. However, in contrast to the known product, the preferred bag strips of the invention are joined to each other by weakened joints so that groups of bags, rather than individual bags, can be separated from the roll. In addition, it is recommended that the first and last bags of each strip carry some easily observed mark or indicia which indicates that the separated strip does in fact contain the prescribed, uniform number of bags. As a further refinement, I suggest that each bag be divided into two compartments by an easily rupturable internal seam. This feature effects shortening of the strip, and thus minimizes stooping of the sponge nurse, and at the same time permits the strip to handle the very large sponges which are used in some kinds of surgery.

BRIEF DESCRIPTION OF THE DRAWING

Several embodiments of the invention are described herein with reference to the accompanying drawing in which:

FIG. 1 is a perspective view of a roll of bag strips showing, in plan, one complete strip.

FIG. 2 is an elevation view of the complete sponge-handling apparatus employed during the course of surgery.

FIGS. 3 and 4 are plan views of alternative bag strips.

FIG. 5 is a sectional view taken on line 5—5 of FIG. 4.

DESCRIPTION OF ILLUSTRATED EMBODIMENTS

Referring to FIG. 1, a plurality of bag strips 11, for example one-hundred strips, are joined together in a continuous length of material wound into a roll 12. Strips 11 are made from a transparent, thermoplastic tubular film flattened to provide front and rear panels 13 and 14 and heat sealed along uniformly spaced, transverse zones 15 to define the individual bags 16. Each bag 16 is about 4 inches deep and 6 1/2 inches wide and preferably is divided into two compartments 17 and 18 by a central, easily rupturable, longitudinal seam 19 formed either by an adhesive or by a weak heat seal.

The continuous length of bag strips is provided with uniformly spaced, transverse lines of perforations 21 which define the strips 11 and permit individual strips to be separated easily from roll 12. At the present time, sponges usually are counted by tens; therefore, since the most frequently used sponges are small enough to fit into compartments 17 and 18, perforation lines 21 are spaced five bags apart. At one end, each bag strip 11 is pierced by a mounting hole 22 surrounded by an annular reinforcement or eyelet 23, and at the opposite end the heat seal 15 is colored, as indicated at 24. These elements 23 and 24 cooperate to provide a visual indication that a separated bag strip 11 contains the prescribed number of bags. This, of course, facilitates accurate sponge counting.

During the course of an operation, individual bag strips 11 are separated from roll 12 and suspended from a suitable support located near the operating table. A convenient support is the intravenous bottle standard 25 depicted in FIG. 2. In operations where computation of blood loss is necessary or desirable, the

bag strip preferably is hung from a spring scale 26 which depends from the cross arm 27 of the standard. The weight per unit volume of blood is well known, so the scale normally is calibrated in grams. However, it could be calibrated in cubic centimeters of blood. As the blood soaked sponges are discarded by the surgeon, the sponge nurse deposits them seriatim in the bags 16 of a hanging strip 11. In the case of small sponges, the seam 19 is left intact, and one sponge 28 is inserted into each of the compartments 17 and 18 of each bag 16. In the case of large sponges, on the other hand, the nurse first ruptures the seam 19 by pulling apart the front and back panels 13 and 14 of the strip and then inserts one sponge 29 into each bag. When all of the bags or bag compartments of a strip 11 are filled, an additional strip or successive strips are attached to the support and filled in the same way.

The bags 16 and their compartments 17 and 18 are large enough to enclose, or at least substantially enclose, the sponges they receive, and consequently contact between the soiled sponges and the atmosphere is minimized. Moreover, since the weight of the bag strips 11 is negligible, and the dry weight of the sponges may either be ignored or taken into account as required, the FIG. 2 apparatus inherently provides the surgeon with a continuous indication of blood loss during the course of the operation. At the completion of the operation, the used bag strips are inspected visually to ascertain the number of each type of sponge they contain, and the totals are compared with the preoperative counts. The transparency of the bags facilitates this procedure because it permits easy verification of proper sponge segregation, i.e., the staff can easily locate a bag or compartment which contains more than one sponge. When sponge accounting is completed, the strips containing sponges are removed from support 25 and discarded. This step, of course, does not necessitate direct handling of the soiled sponges.

The bag strip 11 shown in FIG. 1 is only one of several designs which may be used. FIGS. 3 and 4 depict two others. In the FIG. 3 embodiment, the strip 11a is formed from a sheet of thin thermoplastic material which is folded along the left margin 31 and is heat sealed along diagonal zones 15a to define inclined bags 16a. This strip is superior to the first one as far as manufacturing convenience is concerned, but it may be a little less convenient to use because the bag openings are at their sides rather than their tops. The strip 11b of FIG. 4, on the other hand, utilizes a group of standard BAGGIES plastic bags which are united by a longitudinal reinforcing tape 32 which is adhesively secured to the back panel 14b of the strip. Inclusion of tape 32 insures that the bags remain interconnected as a unit even though the back panels may separate from each other along the perforation lines 21b when the bags are opened. These bag strips can be made individually from commercially available materials, or they can be manufactured in a continuous length as in FIG. 1. However, in the latter case, the tape 32 should be weakened, as by a transverse line of perforations, at the junction between adjacent strips 11b.

Although each of the illustrated bag strips contains a mounting hole and is intended to be suspended from a hook, it should be obvious that the strips can be hung from a spring clip. In this case, the hole and its reinforcement could be omitted, and the indicator function of the hole could be performed by a second colored

band located adjacent the upper end of the bag strip. I claim:

1. Apparatus for handling soiled surgical sponges comprising

- a. plurality of bags joined together in an elongated flat strip and each of which has at least one transparent wall through which a sponge placed therein can be viewed,
- b. the bags being separable from the strip in groups comprising a uniform number of bags by reason of an interconnection between the last bag of each group and the first bag of the next following group which is weaker than the interconnections between the other bags, and
- c. the bags having open mouths all of which face in the same direction with respect to the strip.

2. Apparatus as defined in claim 1 in which each group of bags has indicia at its opposite ends which provide a visual indication of the uniformity of the number of bags in the groups separated from the strip.

3. Apparatus as defined in claim 2 in which

- a. the indicia at one end of the each group is a reinforced region of one bag; and
- b. the indicia at the other end of each group is a mark having a color different from that of the bag material.

4. Apparatus as defined in claim 1 in which each bag has

- a. front and rear panels; and
- b. an easily rupturable, internal connection between said panels which divides the bag into two compartments which communicate with the open mouth,
- c. said connection serving normally to enable the bag to receive and effectively segregate two small sponges, but being capable of being broken manually to adapt the bag to receive a single large sponge.

5. Apparatus as defined in claim 13 in which each easily rupturable connection is a centrally located seam.

6. Apparatus for handling soiled surgical sponges comprising

- a. a plurality of bags joined together in an elongated flat strip and each of which has front and rear panels, the bags having open mouths all of which face in the same direction with respect to the strip,
- b. at least one panel of each bag affording a transparent wall through which the contents of the bag may be viewed, and
- c. the front and rear panels of each bag being joined by an easily rupturable internal connection which divides the bag into two compartments which communicate with the open mouth, said connection serving normally to enable the bag to receive and effectively segregate two small sponges, but being capable of being broken manually to adapt the bag to receive a single large sponge.

7. Apparatus as defined in claim 6 in which each easily rupturable connection is a centrally located, longitudinal seam.

8. Apparatus as defined in claim 22 in which the bags are made of transparent, thermoplastic material.

9. Apparatus for handling soiled surgical sponges comprising

- a. a pair of elongated, superposed, flat, flexible panels which are joined together to define a bag strip including a series of bags,

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- b. one panel being continuous, and the other being provided with longitudinally spaced, transverse cuts which form mouths for the bags which face toward one end of the strip,
- c. at least one of the panels affording transparent walls through which the contents of the bags may be viewed; and
- d. an easily rupturable, internal connection between the panels at each bag which divides the bag into two compartments which communicate with the mouth, said connection serving normally to enable the bag to receive and effectively segregate two small sponges, but being capable of being broken manually to adapt the bag to receive a single large sponge.
10. Apparatus as defined in claim 9 in which each easily rupturable connection is a centrally located, longitudinal seam.
11. Apparatus as defined in claim 9 in which said one panel is pierced by a mounting hole which is located at the end of the strip toward which the mouths of the bags face and which is reinforced.
12. Apparatus as defined in claim 9 in which said panels are made of transparent, thermoplastic material.

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13. Apparatus for handling soiled surgical sponges comprising
- a. a pair of elongated, superposed, flat, flexible panels made of transparent, thermoplastic material and joined together to define a bag strip including a series of bags,
- b. one panel being provided with longitudinally spaced, transverse cuts which form mouths for the bags which face toward one end of the strip, and the other panel being continuous and being pierced by a mounting hole which is located at the end of the strip toward which the bag mouths face and which is reinforced,
- c. each bag having an easily rupturable, internal connection between the two panels which normally enables the bag to receive and effectively segregate two small sponges, but which can be broken manually to adapt the bag to receive a single large sponge.
14. Apparatus as defined in claim 13 in which each easily rupturable connection is a centrally located, longitudinal seam.
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